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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,866	09/11/2003	Honorio T. Granada	018865-004410US	8678

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EXAMINER	
OWENS, DOUGLAS W	

ART UNIT	PAPER NUMBER
2811	

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/660,866	GRANADA ET AL.	
	Examiner	Art Unit	
	Douglas W. Owens	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9,10 and 12-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9,10 and 12-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/10/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 9, 10 and 12 – 15, 18, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,629,835 to Mahulikar et al. in view of US Patent No. 5,814,884 to Davis et al.

Regarding claim 1, Mahulikar et al. teach a method of making a chip device (Fig. 13, for example), comprising:

providing a die (54);

providing a leadframe (62) including a die attach cavity and a plurality of dimples defined around a periphery of the leadframe (Col. 7, lines 34 – 39), the die attach cavity having substantially the same thickness as the die;

placing solder balls into the dimples; and

flipping the die into the die attach cavity and attaching it therein.

Mahulikar et al. do not teach a method, wherein the die comprises a MOSFET. Davis et al. teach a method of making a chip device, wherein the die comprises a MOSFET. It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Davis et al. into the method taught by Mahulikar et al. since it is

desirable for the die to have functionality. The MOSFET is one of the most commonly used semiconductor devices in chip structures because it is needed in many functions. Davis et al. discloses the general teaching that a MOSFET can be used in dies used in a leadframe structure.

Regarding claim 10, Mahulikar et al. teach a method, wherein the die provided is a bumped die.

Regarding claim 12, Mahulikar et al. teach a method, further comprising placing solder (70) on the die.

Regarding claim 13, Mahulikar et al. teach a method, wherein the leadframe comprises a copper based alloy (Col. 7, lines 11 – 16).

Regarding claim 14, Mahulikar et al. teach a method, wherein the leadframe includes a solderable coating (64).

Regarding claim 15, Mahulikar et al. do not teach a method, wherein the die comprises source and gate connections. Davies et al. teach a method, wherein the die comprises source and gate connections (Col. 1, lines 57 – 60). It would have been obvious to one of ordinary skill to incorporate the teaching of Davies et al. into the method taught by Mahulikar et al. for reasons discussed above.

Regarding claim 18, Mahulikar et al. teach a method, wherein the step of attaching the die is performed such that the die is coplanar with a top surface of the leadframe.

Regarding claims 20 and 21, Mahulikar et al. teach a method, wherein the leadframe is a conductive copper based alloy (Col. 7, lines 9 – 17).

3. Claims 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahulikar et al. and Davies et al. as applied to claim 1 above, and further in view of US Patent No. 6,344,687 to Huang et al.

Mahulikar et al. do not teach a method, wherein the leadframe comprises a solderable coating of Ni-Pd. Huang et al. teach a method, wherein the leadframe comprises a solderable of Ni-Pd coating (210; Col. 3, lines 31 and 32). It would have been desirable to one of ordinary skill in the art to incorporate the method taught by Huang et al. since it desirable to provide layers with high solderability.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mahulikar et al. and Davies et al. as applied to claim 9 above, and further in view of US Patent No. 6,458,681 to DiStefano et al.

Mahulikar et al. and Davies et al. do not teach a method, wherein the die has solder balls thereon to serve as source and gate connections. DiStefano et al. teach a die with solder balls thereon (Figs. 1A – 1D, for example). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of DiStefano et al. into the proposed method of Mahulikar et al. and Davies et al., since it is desirable to provide reliable external connections to the die. It would have been further obvious to connect the solder balls to the source and gate, since they require external connections.

Response to Arguments

5. Applicant's arguments with respect to claims 1 – 10 and 12 – 16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Douglas W Owens
Examiner
Art Unit 2811

DWO